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REMARKS

This is a full and timely response to the final Official Action mailed November 13, 2007. Reconsideration of the application in light of the following remarks is respectfully requested.

Claim Status:

Under the imposition of a previous Restriction Requirement, claims 17-28 were withdrawn from consideration and cancelled without prejudice or disclaimer. By the present paper, various claims have been amended. No claims are cancelled. New claim 37 has been added. Thus, claims 1-16 and 29-37 are currently pending for further action.

Applicant further notes that the amendments made in the present paper are intended to clarify the language of the claims without changing or narrowing the scope of the claims.

Allowable Subject Matter:

In the final Office Action, claims 1-16 have been allowed. Applicant wishes to thank the Examiner for the allowance of these claims.

Prior Art:

Claims 29-36 were rejected as anticipated under 35 U.S.C. § 102(b) by U.S. Patent No. 6,140,737 to Boie ("Boie"). For at least the following reasons, this rejection is respectfully traversed.

Claim 29 recites:

A method of operating a micro-electromechanical device comprising first and second plates that are capable of relative movement to vary a width of a gap between

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said first and second plates, and wherein said first and second plates are biased to a relative position with a first gap width between said plates, said method comprising:
applying a voltage difference to said two plates, said voltage difference creating an attractive force against said bias that narrows said gap between said two plates, wherein said voltage difference is greater than a second voltage difference corresponding to a desired second gap width, said voltage difference that is higher than said second voltage difference being applied to accelerate relative movement between said two plates to produce said desired second gap width between said plates;
and,
after applying said voltage difference, reducing said voltage difference between said two plates to said second voltage difference corresponding to said desired second gap width, *wherein said second gap width is less than said first gap width.*

(Emphasis added).

Applicant wishes to note the highlighted language in claim 29, "*wherein said second gap width is less than said first gap width.*" It should be clear that claim 29 describes a method in which the two plates initially have a first gap width between them and at least one of the plates is then moved so that the gap between them narrows to a second, smaller gap width, i.e., "*wherein said second gap width is less than said first gap width.*" On this point, the recent Office Action incorrectly attempted to equate the claimed "desired" second gap width with the initial or rest position. (Action, p. 4; "a desired gap value (corresponding to the rest position)."). Applicant wishes it to be clear that claim 29 recites a first gap width which is larger than a desired second gap width, and that the gap is narrowed from the first gap width to arrive at the desired second gap width.

While there is a "second voltage difference" for the two plates "corresponding to [the] desired second gap width" to which the device is moving, this second voltage difference is not initially applied. Rather a different "voltage difference" that is "higher than said second voltage difference [is] applied to accelerate relative movement between said two plates to produce said desired second gap width between said plates." Then, claim 29 recites "after

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applying said voltage difference, reducing said voltage difference between said two plates to said second voltage difference corresponding to said desired second gap width.”

This subject matter, if properly understood, is clearly not taught or suggested by the Boie reference. Boie does not teach or suggest a method in which the gap between two plates is to be narrowed from an initial width to a smaller, desired width, with a voltage higher than that corresponding to the desired width being applied before the voltage that does actually correspond to the desired width.

Boie teaches a “micro-machine structure [that is] actuated by electrostatic attractive forces between resiliently mounted elements maintained at different voltage potentials.” (Boie, col. 1, lines 18-20). By the application of a voltage difference between the elements, a “movable part [is moved] from a rest position to an activated position.” (Boie, col. 2, lines 51-21). However, Boie is concerned that charge will accumulate on the elements of the micro-machine structure. “Accordingly, there is a need for an electrostatic actuating mechanism and method for controlling the movement of micro-machines and which does not cause the micro-machines to accumulate charges.” (Boie, col. 1, lines 35-40).

To address this problem, Boie teaches the use of alternating voltage signals that prevent the accumulation of charge on the micro-machine members. “An object of the present invention is to provide an electrostatic actuating method and apparatus for operating a micro-machine structure that does not induce accumulation of residual charges on the structure. Consequently, an alternating voltage signal from a voltage driver is applied to the electrodes of the electrostatic actuator at a frequency such that the mechanical structure behaves as if it is driven by a DC voltage signal.” (Boie, col. 1, lines 40-50).

Another issue, however, arises when an alternating voltage signal is used to avoid charge accumulation. Specifically, the frequency of the alternating voltage signal must avoid

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the natural or resonant frequency of the movable element in the micro-machine structure.

Otherwise, a resonance may result doing damage to the micro-machine or its operation.

Accordingly, the recent Office Action specifically cites to Boie at col. 2, lines 8-31.

(Action, p. 4). This portion of Boie states the following.

a micro-machine structure has a stationary part and a movable part resiliently connected to the stationary part and movable between a rest position and an activated position. The stationary part and the movable part form a flexible sub-structure having a resonant frequency. An actuator comprises a first electrode disposed on the stationary part and a second electrode disposed on the movable part. The actuator includes a wave generator, connected to the first electrode and the second electrode, for generating an alternating voltage signal to the first electrode and a reference voltage signal to the second electrode so as to impart an electrostatic attractive force between the stationary and movable parts for moving the movable part from a rest position to an activated position. *The electrostatic attractive force has a constant force component and a vibratory force component that depend on the amplitude of the wave. The alternating voltage signal is adjusted to a frequency such that the frequency of the vibratory component is sufficiently higher than a resonant frequency of the sub-structure so that the vibratory force component is absorbed by the sub-structure and the activated position of the movable part remains depend [sic] only on the amplitude of the wave.*

(Emphasis added).

Thus, Boie teaches applying an alternating voltage signal to a micro-machine structure where “the activated position of the movable part remains depend [sic] only on the amplitude of the wave.” (*Id.*). Consequently, the maximum voltage applied, “the amplitude of the wave” corresponds to the desired or “activated position for the movable part.” (*Id.*). This is in direct contrast to Applicant’s claim 29 which includes “applying a voltage difference to said two plates, ... wherein said voltage difference is greater than a second voltage difference corresponding to a desired second gap width.” (Emphasis added).

When properly understood, the teachings of Boie are almost entirely inapposite to subject matter recited in claim 29. Specifically, as demonstrated above, Boie does not teach or suggest a method that includes “applying a voltage difference to said two plates, said voltage difference creating an attractive force against said bias that narrows said gap between

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said two plates, wherein said voltage difference is greater than a second voltage difference corresponding to a desired second gap width.”

Additionally, Boie does not teach or suggest a “voltage difference that is higher than said second voltage difference being applied to *accelerate relative movement between said two plates* to produce said desired second gap width between said plates.” (Emphasis added).

Boie does not teach, suggest or even mention a method that involves *accelerating* relative movement between plates to produce a desired gap width.

Additionally, Boie does not teach or suggest “after applying said voltage difference, reducing said voltage difference between said two plates to said second voltage difference corresponding to said desired second gap width.”

“A claim is anticipated [under 35 U.S.C. § 102] only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987) (emphasis added). See M.P.E.P. § 2131. For at least these reasons, the rejection based on Boie of claim 29 and its dependent claims should be reconsidered and withdrawn.

Additionally, various dependent claims of the application recite subject matter that is further patentable over the cited prior art. Specific, non-exclusive examples follow.

Claim 30 recites “further comprising reducing said voltage difference between said two plates to said second voltage difference before movement between said two plates reaches said desired gap value.” When it is understood, as explained above, that the desired gap value is different and smaller than the gap at the biased rest position from which the plates started, it become inescapably clear that Boie does not teach or suggest this subject matter of claim 30, i.e. “reducing said voltage difference between said two plates to said

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second voltage difference before movement between said two plates reaches said desired gap value." For at least this additional reason, the rejection of claim 30 should be reconsidered and withdrawn.

Claim 32 recites:

charging a node electrically disconnected from said two plates prior to applying said voltage difference; and electrically connecting said node with at least one of said plates to apply said voltage difference.

In this regard, the Office Action cites to element 20 of Boie. (Action, p. 5). Element 20 is a "voltage source." (Boie, col. 3, line 16). Boie does not, however, teach or suggest any means of electrically disconnecting the voltage source (20) from the micro-machine structure. Consequently, Boie does not teach or suggest "charging a node electrically disconnected from said two plates prior to applying said voltage difference; and electrically connecting said node with at least one of said plates to apply said voltage difference." (Emphasis added). For at least this additional reason, the rejection of claim 32 should be reconsidered and withdrawn.

Claim 33 recites "electrically isolating said two plates after applying said voltage difference by opening a switch between said node and at least one of said plates." In this regard, the Office Action states that "it is easy to turn the voltage source 20 on/off." (Action, p. 5). However, merely turning the voltage source on or off is not the same as "electrically isolating said two plates after applying said voltage difference by opening a switch between said node and at least one of said plates." For at least this additional reason, the rejection of claim 33 should be reconsidered and withdrawn.

Claim 34 recites "wherein said reducing said voltage difference is performed selectively electrically connecting at least one of said plates with a second node which is held

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at said second voltage corresponding to said desired gap value.” As above, when Boie is properly understood, it becomes clear that Boie does not teach or suggest this subject matter. Specifically, Boie does not teach or suggest two different voltages corresponding respectively to a desired gap value and a greater voltage, where the desired gap value is not at a rest position. For at least this additional reason, the rejection of claim 34 should be reconsidered and withdrawn.

Claim 35 recites “wherein said desired second gap width corresponds to a desired capacitance between said two plates, said two plates being a variable capacitor.” In contrast, Boie does not appear to teach or suggest this subject matter. Moreover, the Office Action fails to indicate how or where Boie is thought to taught this subject matter. For at least this additional reason, the rejection of claim 35 should be reconsidered and withdrawn.

Claim 36 recites “wherein said desired second gap width corresponds to a wavelength of light to be output by a diffractive light device, said diffractive light device comprising said two plates.” In contrast, Boie does not appear to teach or suggest this subject matter. Moreover, the Office Action fails to indicate how or where Boie is thought to taught this subject matter. For at least this additional reason, the rejection of claim 36 should be reconsidered and withdrawn.

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Conclusion:

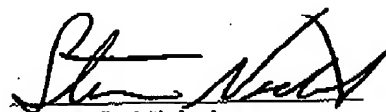
The newly added claim is thought to be patentable over the prior art of record for at least the same reasons given above with respect to the original independent claims.

Therefore, examination and allowance of the newly added claim is respectfully requested.

For the foregoing reasons, the present application is thought to be clearly in condition for allowance. If the Examiner has any comments or suggestions which could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the number listed below.

Respectfully submitted,

DATE: February 12, 2008



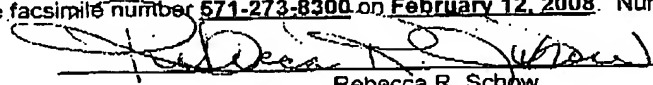
Steven L. Nichols
Registration No. 40,326

Steven L. Nichols, Esq.
Managing Partner, Utah Office
Rader Fishman & Grauer PLLC
River Park Corporate Center One
10653 S. River Front Parkway, Suite 150
South Jordan, Utah 84095

(801) 572-8066
(801) 572-7666 (fax)

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Rebecca R. Schow